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ABSTRACT

Evidence of semantically based orderings of phrasal coordinations in child speech is explored. Speech samples from two children are analyzed to show that such sequences occur frequently, are internally consistent, and are part of children's active repertoire of referential and expressive acts at an early age. The samples were obtained from one child between the ages of 18 to 27 months and another between 36 to 41 months. The evidence suggests that early in child speech, word order in coordination lends itself to iconization of several types of semantic distinctions. Children acquire a principle which states that a preferred ordering exists for semantically distinct constituents of phrasal coordinations. Further, such an ordering iconically encodes the subjective primacy of one referent by placing it first in the coordination. The need for longitudinal data on spontaneous speech accompanied by information on gestures, focus of attention, and parents' speech is cited. (RW)

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Semantics of Word Order in Co-ordination

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When Ronald Reagan and Alexander Haig walk into a press conference, the nation's highest-ranking public official enters ahead of his appointee. As a rule, he also assumes a loftier, more central or more visible spot on the podium. The symbolism of these acts is then mirrored linguistically when the men are announced by their titles: invariably it is, "the President and Secretary of State," never the other way around (Haig's wishes to the contrary notwithstanding).

The fixed order of the co-ordinate sequence "President and Secretary of State" was cited as early as 1961 by Roman Jakobson to illustrate one of the many ways language as a semiotic system encodes asymmetrical semantic relationships. Other studies, including Cooper and Ross (1975), have examined frozen expressions such as friend or foe, animal, vegetable, and mineral, Cowboys and Indians, here and there, etc., where the first terms are said to incorporate characteristics of the prototypical speaker, or the "Me." This is held as further evidence of how the constituent order of co-ordinate strings reflects semantic distinctions regularly made by speakers. In this way natural language, with varying degrees of fixedness of word order, conventionalizes and lexicalizes co-ordinate sequences for semantic effect.

With these observations as a point of departure, the present paper seeks in child speech similar evidence of semantically-motivated orderings of phrasal co-ordinations. It will be argued that such sequences occur frequently, are internally consistent, and form part of the child's active repertoire of referential and expressive acts at a very early age. The paper will proceed via the following steps: (a) First this study will be situated within the body of pertinent existing research; (b) Next, co-ordination data from two well-known corpora of spontaneous speech, those of "Eve" and "Adam" (v. Brown, 1973), will be classified and analyzed; (c) Third, a plausible sketch of the ontogenesis of what may be called the semiotics of phrasal co-ordinations will be developed; (d) Finally, ways of testing the provisional conclusions of the paper will be recommended, along with several areas of related future research.

Numerous studies embracing a wide range of perspectives have documented the interaction of linear order with semantic factors. At the level of narrative structure, for example, it is found that adults in scene-description tasks tend to proceed from near to far, from left to right, and from most important to least important (MacKay, 1982). At the sentence level, the sequencing of

functional relationships of constituents is seen by McNeill (1979) as an example of "semiotic extension," whereby ideas from the sensori-motor domain are given form and take on iconic or symbolic meanings through linguistic signs. McNeill argues that English-speaking children's preferences for such word order sequences as Verb-before-Object (Action-Patient), possessor-before-possessed, and entity-before-location (roughly, figure-before-field) are productive iconic mappings of conceptual relations. More germane to the situation at hand is an ordering predisposition noted in MacWhinney (1977, 1980), whereby children initialize elements with which they most closely identify. These elements, called perspectives by MacWhinney, are examined at the sentence level and are found often to be agents in active voice constructions. Finally, at the level of phrasal co-ordinations, it has been found that color terms are ordered by children in preferential sequences. In a study by Conley and Cooper (in press), subjects aged 6;9 to 7;6 were asked to name the colors of pairs of intertwined shoelaces; their tendency was to fix in immutable order pairs of colors which were highly contrastive in terms of brightness, while color pairs that were similar were more flexibly ordered. Another pattern placed the darker color before the lighter color in conjoined pairs; the strongest orderings that emerged were brown and white, brown and pink, yellow and white, and black and white. Conley and Cooper speculate that these orderings may be explicable in terms of natural salience, the darker colors being more salient in the environment.

The present study is in at least one relevant aspect an extension of the Conley and Cooper research. The quest for ordering principles in language normally involves teasing apart many confounding factors; by examining, as Conley and Cooper did, only sequences of conjoined elements of the same grammatical category, one restricts considerably the number of degrees of freedom. This is not to say, however, that all confounding factors in the present data have been eliminated, nor does it mean that more information in the form of richer contextual notes would not help illuminate the material at hand.

The data displayed in Table 1 represent 116 co-ordinations of an exhaustive total of 187 in the Eve sample (age = 18 months to 27 months; MLU = 1.39 to 4.22). Also listed for comparison are 13 lexicalized co-ordinations produced by Adam in seven separate 2-hour sessions over the period 36 months to 41 months; MLU = 3.32 to 4.49.

The criterion for designating a subcategory (e.g., "you and 3rd person") in Categories B, C, and D is the occurrence of two or more tokens in the corpus. Not included in the Table are co-ordinations of the following types: "entailed" verbal sequences such as try and cook, go and take ("Baby Sarah go an' take a nap"); various sentential sequences such as "You cut it in little pieces ... and

Table 1

Co-ordinations by Eve with Lexicalized Forms by Adam

A LEXICALIZED FORMS	B PERSON DEIXIS	C PARENTS	D FRASER
up and down 7/0	you (mother) and 3rd person (proper names, common nouns) 9/0	parent name-other name (all "Fraser") 12/4	Fraser-3rd person 29/10
bread and butter 4/0	you-1st person 3/3	parent-1st person (name or pronoun) 3/2	Fraser-1st person name 2/0
A and P (store) 3/0	1st person-3rd person 5/4	cf. Grannie and Granpa 2/2	Fraser and you 0/3
shoes and socks black and blue round and around nice and quiet big-little this-that on-off better-not better (cf. better-worse)	3rd person and 3rd person proper common 2/0	mother-father 6/9	
EACH 1/0			
From the Adam sample:			
rough and ready 6/0			
up and down 2/0			
Cowboy-Indian 1/1			
cat and mouse meat and gravy back and forth			
EACH 1/0			

bite it, this way;" and several other co-ordinations such as guitar and banjo, cookies and graham crackers, for which there was only one occurrence and for which there was no apparent semantic patterning. Below each exemplar included in the Table, the numbers to the left of the slash indicate the frequency of occurrence of the sequence in the order given; numbers to the right of the slash are reversed-order frequencies. A hyphen between constituents means that at least one occurrence of that co-ordination was not of the simple form X and Y (e.g., Fraser and Cromer), but rather occurred in a complex sequence such as Fraser come and Cromer come, where the constituents in question ("Fraser" and "Cromer") are ordered within parallel syntactic contexts above the phrasal level. It is to be noted as well that some co-ordinations are included in more than one category; under the "Fraser-3rd person" subcategory, for example, are included tokens also listed under "parent name-other name." Thus of the 132 co-ordinations summed from Table 1, 16 are listed twice, giving the figure of 116 mentioned earlier.

A cursory glance at the examples listed in Category A for Eve reveals no deviation from lexicalized sequences (the same is true, with the exception of a single Indian-Cowboy, for Adam's output). From the available contextual data, it appears that only four of Eve's forms (two up and down, one each nice and quiet, round and around) were immediate imitations of her mother's speech. The data in Category B suggest invariance with respect to second person-third person sequences, a pattern not necessarily observed in adult speech, where pragmatic demands such as topic/focus motivate varied sequences. Category C reveals a strong tendency to place the parent name first, a pattern broken only when the other term is first person or "Fraser." Note that no uniform pattern obtains for Grannie and Granpa nor for mother-father. A strong pattern is observed in Category D, where in most cases "Fraser" precedes other proper names.

Thus, several types of consistency emerge from the Eve data. First, Eve in most cases is internally consistent or frozen in her production of co-ordinations. This consistency is best seen in Categories A and D and in the patterns "you and 3rd person" and "parent name-other name." Secondly, with reference to Category A, Eve's output coincides fairly consistently with Adam's and with adult models. Also, with reference to Category D, Eve's output coincides with what is known about her mother's speech. According to Brown (personal communication), the mother of Eve typically referred to the experimenters, Colin Fraser and Richard Cromer, as "Fraser and Cromer" and not vice versa. Finally, the data are consistent with various accounts of semantic ordering principles in language generally, notably those formalized in Cooper and Ross (1975) and suggested for children's speech in MacWhinney (1980). As mentioned earlier, these accounts posit principles whereby first conjuncts are "closer" to the speaker in semantic

or conceptual space.

These data, meager though they be, are nevertheless suggestive of principled patternings. Assuming that semantic distinctions do exist in the mind of these young speakers--this being an assumption independent of linguistic evidence--these semantic distinctions appear to be routinely reflected in productive linguistic patterns.

How might these semantic routines arise? Sketching their ontogeny requires a certain amount of speculation, which hopefully will soon be replaced with empirical evidence. Nevertheless, casual observations of children's behavior, as well as studies such as Givón (1979), do suggest that at some early stage of development children go beyond the recognition that order is a practical, benefit-accruing notion (e.g., the child who sticks her hand first into the bag of M&M's gets the most immediate gratification and probably more candy), to become sensitive to the symbolic, or iconic, aspects of order in language. For example, younger siblings are often upset when adults inadvertently refer to them by older siblings' names first.

From available evidence, it seems that early on in child speech, word order in co-ordinations lends itself to iconization of several types of semantic distinctions. Both Adam and Eve, for example, invariably captured temporal and causal distinctions in structures such as, "We all go(ed) to the beach and saw ...," "gon' make noise ... and I will hear her," "Jump and down," "I fell down on Paul bed and missed it," where co-ordination-initial elements occurred first in real time. Another example from Adam's co-ordinations encodes the notion of causality and temporality: "I drink and I cough and cough and cough." In the socio-cultural context of family and friends, co-ordinations can be used to signal more favored or proximate referents (v. MacWhinney). According to Brown (personal communication), the experimenter referred to as Fraser was much closer to all members of Eve's family than was Cromer. Fraser was the first experimenter to make Eve's acquaintance; he was always present at taping sessions; and when the taping sessions ended, it was as if a true member of the family had left. Small wonder then that such a semantic asymmetry finds expression in the preponderance of co-ordinations with "Fraser" as first element. This pattern is perhaps relatable to the parent-before-other pattern noted in Category C and to Category B, where "you" refers to the mother, who was present during the taping. In all three cases the ostensibly preferred human referent is mentioned first in the co-ordination.

From these types of evidence one is led to postulate that, at some early stage in linguistic development, children acquire a principle which states that for semantically-distinct constituents of phrasal co-ordinations, a preferred ordering obtains. It further appears that such an ordering iconically encodes what may

loosely be called the subjective primacy of one referent by placing it first in the co-ordination.

Additional motivation for this hypothesis comes from several independent sources: (1) The Conley and Cooper experiment, though conducted with older children, demonstrates that perceptual salience dictates word order; (2) In the case of Eve, there is evidence of an adult-speech model, namely the mother; (3) Variants of such an ordering principle are cited in MacWhinney (1977, 1980) and Cooper and Ross (1975).

As the child grows older, this powerful ordering principle might be subject to certain constraints. One may envision, for example, a politeness constraint, whereby forms such as you and I may be conventionally and not semantically motivated. Such a constraint is typically observed in adult speech and does not seem to apply yet for either Eve or Adam. There may be a discourse constraint, whereby the pragmatic demands of a communicative situation (anaphora, topic/focus, etc.) may dictate order. It would be interesting to see whether such a constraint would apply as a function of the partner in the speech situation (cf. in particular Eve's pairings which seem to obey only the preferred ordering principle). Needless to say, different data and analysis of context would be essential in addressing this issue.

From these observations and speculations, it is clear that a good deal more study in this area is warranted. The first requirement for any further work with spontaneous speech is significantly more data, preferably longitudinal, with full contextual notes recording gestures and the child's focus of attention, along with a full record of the parents' speech and especially their manipulations of co-ordinations.

Several questions deserve attention if future research is conducted in this area:

(1) Is routinization of semantic sequences signaled by acoustic cues, such as compression of the length of the utterance, or vowel reduction in the conjunction, yielding a syllabic nasal consonant rather than a full "and"? Preliminary instrumental evidence suggests that this is the case.

(2) What is the relationship between the lexicalization of sequences such as bow and arrow, peanut butter and jelly, etc., and routinization by the individual child of similar sequences? To what extent are the child's ordered sequences unanalyzed repetitions or analogues of adult lexicalized forms, and to what extent are they the child's own inventions? Is the semantic ordering principle proposed for Categories B, C, D reponsible for or in any way related to the forms attested in Category A? Does consistency vary with age, that is, are forms more routinized at an early age than later, or do they become even more invariant as linguistic sophistication increases? When do phonetic factors come

into play, such as meter and syllable number (kit and caboodle) and vowel alternations (dribs and drabs)?

(3) Is the child's semiotic system in co-ordination part of a larger system of deictic reference and communicative egocentrism (cf. Clark, 1973 and Miller, 1979)? In other words, does ordering by subjective primacy reinforce the notion of the centrality of the speaker in speech situations?

(4) Finally, one might consider the possibility that preferential order in co-ordinations does not iconize hierarchical semantic relationships at all, but rather results from information-processing demands of speakers and hearers. This possibility (raised anonymously at the SCLRF presentation) is elaborated in Bock (1982, p. 39), holding that "automatic deployment of a certain alternative from among a set of syntactic options may be used as a means of accommodating transient processing demands while simultaneously keeping the syntactic processing burden of working memory to a minimum." If such were the case, the presumed second level of meaning, the symbolic, would simply be absent. Further, it would suggest that children quite early on begin to develop fairly sophisticated and efficient mechanisms for the processing of linguistic information.

It is only fitting to close by acknowledging the enormous debts owed to many of those in attendance at the SCLRF who collected and analyzed the Adam and Eve data nearly twenty years ago. Likewise, a great debt is owed to those who have been responsible for demonstrating the roles of semantics, pragmatics, and context in the development of child syntax. The preliminary research reported here leads to the tentative conclusion that some of these same factors are also responsible for certain pre-grammatical orderings in co-ordinations. It is to be hoped that this phenomenon will receive attention in the future.

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